

DETAILED ACTION

Election/Restrictions

1. Applicants' election with traverse of the Species embodied in claims 13-15, 18, 19, and 21-24 in the reply filed on 10 March 2008 is acknowledged. The traversal is on the ground(s) that the examiner has failed to establish a lack of unity. This has been found persuasive.

The requirement is withdrawn and all claims have been examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The reference to Feke et al. (6,023,961) has been crossed out and placed on the PTO-892 because the inventor of the reference is -- Discenzo et al. -- and not Feke et al.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "control/evaluation electronics unit", as recited in claim 13 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

Page 6, line 28: The third occurrence of the term "areas" should be corrected to read - points -- because reference numeral 58 has been designated as contact points. Appropriate correction is required.

7. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The recitation of an electrical control unit, as recited in claim 14.

Claim Objections

8. Claims 13-25 are objected to because of the following informalities:

Re claim 13, claim lines 4, 5, and 14: The phrase “for an electrical controlling” should be corrected to read -- for electrically controlling --.

Re claim 13, claim line 10: The conjunction “and” should be deleted.

Re claim 14, claim line 4: The “comma” should be replaced with a -- semicolon --.

Re claim 21, claim line 1: The second “colon” should be deleted.

Re claim 21, claim line 3: The “comma” should be replaced with a -- semicolon --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which

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was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to provide an enabling description for providing two units that provide electrical control as recited in claim 14. Claim 13, claim lines 7 and 8 recite that the first supply lines are connected at one end to the first contact points and at the other end to a control/evaluation electronics unit. This corresponds to the specification which recites that the electrical supply lines/contact springs (7) contacting the first contact points (6) on the sensor are connected electrically to a control/evaluation electronics unit. Nowhere, however, does the specification recite an electrical control unit or a second unit to provide electrical control.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 13-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention.

Re claim 13, claim lines 5 and 6: It is not clear what “being resistant in relation to liquid” means. Is it being suggested that the contact points change their resistance in the presence of the liquid; or that the material composition of the contact points is such that the contact points resist degradation or corrosion or do not degrade based when they come into contact with the liquid?

Re claim 13, claim line 7: It is not clear what “being resistant in relation to liquid” means.

Re claim 13, claim line 14: An “electrical controlling” of what occurs based on the second electrical contact points?

Re claim 13, claim lines 14 and 15: It is not clear what “being resistant in relation to liquid” means.

Re claim 13, claim line 16: It is not clear what “being resistant in relation to liquid” means.

Re claim 21, claim line 3: The phrase “the protective container” lacks antecedent basis.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 13, 14, and 24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over “Sensing Liquid Properties with Thickness-Shear Mode Resonators” (Martin et al.).

With respect to the limitations of claims 13 and 24, Martin et al. disclose a device having for sensing liquid properties, comprising: a piezoelectric viscosity sensor, comprised of a smooth texture-surface thickness-shear mode resonator, having electrical points/contact pads for electrically controlling the oscillations of the sensor; first supply lines for connecting the contact pads of the sensor; a second sensor device, also comprised of a thickness-shear mode resonator having a textured-surface for measuring the density of the fluid is provided on the surface/substrate of the viscosity sensor device and including second electrical contact points/pads for electrically controlling the sensor device; and second supply lines for connecting the second sensor device, see Figure 8. Additionally, the device is fitted with a resistance temperature device to measure temperature. Martin et al. fail to expressly show a control/evaluation unit; however, the examiner argues that this structure is inherent to the functionality of the sensor. Without the use of a controller connected to the supply lines, and thus to the sensors, then the properties of the fluid cannot be attained or evaluated. Martin et al. also fail to expressly disclose that the supply lines and the contacts are resistant to the liquid; however, the examiner argues that this feature is well known to those of ordinary skill in the art as a means of providing a long lasting and accurate sensor that doesn't degrade over time.

With respect to the limitations of claim 14, Martin et al. disclose that the piezoelectric viscosity sensor is a disk-shaped quartz crystal and that the first contact points are formed on the front and rear side of the disk-shaped crystal.

16. Claims 13-15, 24, and 25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over DE 19644290 (Roth et al.).

With respect to the limitations of claims 13, 24, and 25, Roth et al. disclose a sensor (10) for simultaneous measurement of two properties of substance in a fluid, comprising: a piezoelectric viscosity sensor (12, 14a, 14b) having electrical points/contact pads (20) for electrically controlling the oscillations of the sensor; and a second sensor device comprising an interdigitated capacitor (22a, 22b), for measuring electrical properties of the fluid, is provided on the surface/substrate of the viscosity sensor device, and including second electrical contact points/pads for electrically controlling the sensor device. Additionally/Alternatively, the sensor (10) may be fitted with a temperature sensor. Roth et al. fail to expressly show first and second electrical supply lines or a control/evaluation unit; however, the examiner argues that these structure are inherent to the functionality of the sensor. Without the use of supply lines connected to the sensors, then the properties of the fluid cannot be attained or evaluated. Roth et al. also fail to expressly disclose that the supply lines and the contacts are resistant to the liquid; however, the examiner argues that this feature is well known to those of ordinary skill in the art as a means of providing a long lasting and accurate sensor that doesn't degrade over time.

With respect to the limitations of claims 14 and 15, Roth et al. disclose that the piezoelectric viscosity sensor (12, 14a, 14b) is a disk-shaped quartz crystal and that the first contact points are formed on the front and rear side of the disk-shaped crystal. Additionally, it would appear that the first contact point/pads leave the front and rear side exposed in an edge area; and the second sensor is positioned in this edge area.

17. Claims 13-15, 24, and 25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over DE 10152777 (Büttgenbach et al.).

With respect to the limitations of claims 13, 24, and 25, Büttgenbach et al. disclose a device (1) for determining the quality of a medium, comprising: a piezoelectric viscosity sensor (3, 12, 14) having electrical points/contact pads (13) for electrically controlling the oscillations of the sensor; first supply lines for connecting the contact pads of the sensor (3, 12, 14) to a carrier board; a second sensor device (4, 5, 6, 7), one of which comprises an interdigitated capacitor (5, 20, 21) for measuring electrical properties of the fluid is provided on the surface/substrate of the viscosity sensor device and including second electrical contact points/pads for electrically controlling the sensor device; and second supply lines for connecting the second sensor device to the carrier board. Additionally, the device (1) is fitted with a temperature sensor (7). Büttgenbach et al. fail to expressly show a control/evaluation unit; however, the examiner argues that this structure is inherent to the functionality of the sensor. Without the use of a controller connected to the supply lines, and thus to the sensors,

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then the properties of the fluid cannot be attained or evaluated. Büttgenbach et al. also fail to expressly disclose that the supply lines and the contacts are resistant to the liquid; however, the examiner argues that this feature is well known to those of ordinary skill in the art as a means of providing a long lasting and accurate sensor that doesn't degrade over time.

With respect to the limitations of claims 14 and 15, Büttgenbach et al. disclose that the piezoelectric viscosity sensor (3, 12, 14a, 14b) is a disk-shaped quartz crystal and that the first contact points are formed on the front and rear side of the disk-shaped crystal. Additionally, it would appear that the first contact point/pads leave the front and rear side exposed in an edge area; and the second sensor (4, 5, 6, 7) is positioned in this edge area, col. 8, lines 28-32.

18. Claims 18, 19, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of DE 10112433 (Jakoby et al.).

With respect to the limitations of claims 18 and 19, Martin disclose all of the limitations of the base claim, but fails to disclose a viscosity sensor having first and second electrical supply lines formed from contact springs.

Jakoby et al. disclose a piezoelectric viscosity sensor having first contact points (8) connected at one end to first electrical supply lines (7) in the form of contact springs located on an edge area of the viscosity sensor. The contact points and the supply lines are resistant to degradation from the liquid. Manufacturing the first supply lines, and in particular both sets of supply lines as contact springs would have been obvious

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to one of ordinary skill in the art as a means of providing a solid connection while minimizing weight, as well as providing mechanical accommodation of a disk-shape.

With respect to the limitations of claim 21, Martin disclose all of the limitations of the base claim, but fails to disclose a viscosity sensor situated in a container having a base and cap.

Jakoby et al. disclose a piezoelectric viscosity sensor having a disk-shaped quartz crystal located within a container having a cap (21) and a base (20). Providing a cap would have been obvious to one of ordinary skill in the art as a means of protecting the sensor from flowing stream while still having the ability to measure viscosity, density, and temperature of the fluid.

With respect to the limitations of claim 22 and 23, Martin disclose all of the limitations of the base claim, but fails to disclose a viscosity sensor situated in a container having a base and cap, whereby the first and second electrical supply lines are lead out of the container through bushings made of glass.

Jakoby et al. disclose a piezoelectric viscosity sensor having a disk-shaped quartz crystal located within a container having a cap (21) and a base (20), whereby the supply lines are passed through bushings (3) located within the base (20) of the container. Providing bushings for the supply lines to pass would have been obvious to one of ordinary skill in the art as a means of securing the sensor within the container.

Allowable Subject Matter

19. The following is a statement of reasons for the indication of allowable subject matter:

Prior art was not relied upon to reject claims 16, 17, and 20 because the prior art fails to teach and/or make obvious the limitations of the above cited claim in combination with all of the limitations of the base claim and any intervening claims.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

The prior art to US 7,104,117 (Büttgenbach et al.) is deemed to be an English language family equivalent of DE 10152777.

The prior art to US 6,755,073 (Jakoby et al.) discloses a viscosity sensor having a piezoelectric disc having contact springs on the outer edge area of the viscosity sensor and bushings for holding the sensor via the contact springs to a base.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL S. LARKIN whose telephone number is (571)272-2198. The examiner can normally be reached on 8:30 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel S. Larkin/
Primary Examiner, Art Unit 2856
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